

Apollo 14 ALSEP Finally Quits After Five Years of Sending Data

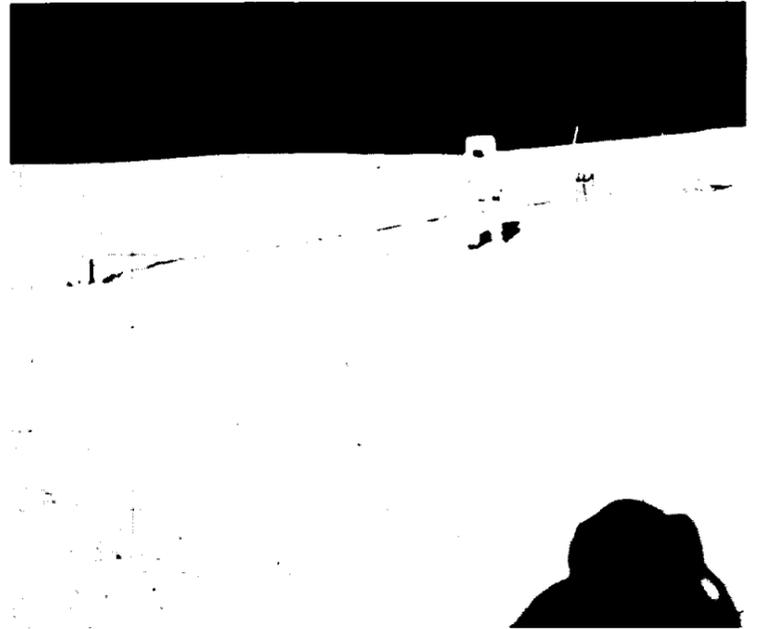
After 4 years, 11 months and 13 days of continuous data transmission, the Apollo 14 Lunar Scientific Experiments Package (ALSEP) failed. The station was originally set up in February 1971 by Alan B. Shepard and Edgar D. Mitchell during the third manned exploration of the moon.

The Apollo 14 ALSEP, one of five stations on the moon, was essential in providing scientists a lunar seismic network. With the Apollo 12 station and stations at Apollo sites 15 and 16 subsequently installed, the ALSEP 14 station provided geophysicists necessary data to locate moonquakes and begin the study of the moon's interior structure.

Originally designed for a life of one year, the ALSEP 14 has long outlived its specifications. It is the first of the ALSEPs to fail completely although it has had problems before. Almost one year ago, in March 1975, the ability of the station to receive commands from Earth was lost and never regained. However, in the meantime the 14 station continued to transmit data about the moon's seismic activity.

ALSEP engineers at JSC believe that the most likely cause of the failure is an electronic component which quit functioning. A small chance remains that the failure was due to thermal stress as the instruments underwent dramatic temperature changes. The temperature excursions occur every time the moon undergoes sunrise or sunset. Maximum temperatures reach 227 degrees C and fall to minus 170 degrees C. The ALSEP stations have gone through temperature changes of as much as 400 degrees C in less than two hours.

The four remaining ALSEP stations continue to provide lunar scientists with data concerning the moon's seismic activity, heat flow, interactions with the Earth's mag-



REMEMBER WHEN? — Apollo 14 Lunar Module pilot Edgar D. Mitchell carries the penetrometer toward crewmate Alan B. Shepard (shadow) while erecting the Apollo Lunar Surface Experiment Package at Fra Mauro. The Apollo 14 ALSEP finally gave up the ghost January 18, 1976.

netic field, the solar wind and cosmic particles which continuously bombard the moon's surface.

The contribution of the ALSEP stations to lunar science is substantial. Larry Haskin, chief of the JSC Planetary and Earth Sciences Division said, "most of what we know about the interior of the moon has come from these packages." A partial list of important findings based on ALSEP data includes:

- * The existence of moonquakes, several thousand a

year with most of them about 4 on the Richter scale.

- * Indications of a lunar core at or near the melting point.
- * A thick lithosphere that has probably precluded mountain-building on the moon.
- * A tenuous atmosphere on the moon's surface deriving from solar wind particles.

The ALSEPs are the most sophisticated sensors which will be
(Continued on page 2)

Marshall to Manage Spacelab Payloads

NASA has announced assignment of project management responsibility for the first two Spacelab payloads to the NASA-Marshall Space Flight Center.

Dr. William R. Lucas, MSFC director, received notification of the assignments by letter from Dr.

Noel W. Hinners, NASA Associate Administrator for Space Science.

Spacelab 1 and 2 are currently scheduled for flight on the space Shuttle in 1980.

The Marshall Center prepared a project plan to submit to NASA Headquarters. An Announcement of Opportunity will be issued by NASA Headquarters shortly.

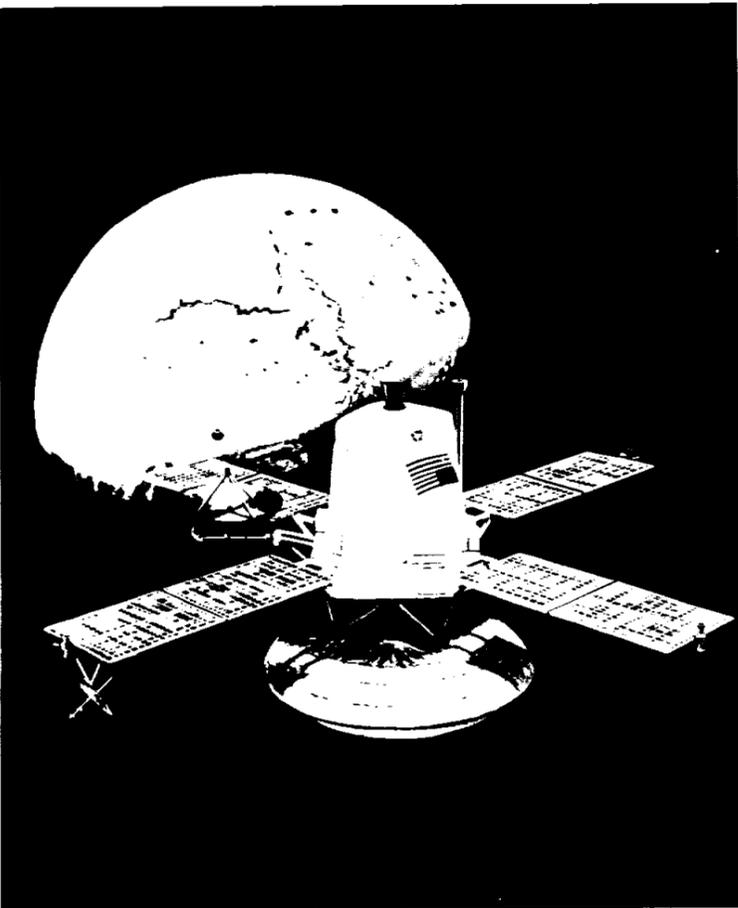
The announcement will serve as notification to scientists of the scheduled missions and invite them to submit proposals for experiments to be carried aboard Spacelab.

Determination of experiments to be carried will be made by NASA Headquarters, with support from the Marshall Center, after consideration of all responses to the announcement.

Selection of experiments will have a direct bearing on the identification of scientists or payload specialists who will serve as crew members.

The Spacelab 1 mission is scheduled for launch from the NASA-Kennedy Space Center on July 15, 1980. Spacelab 2 will follow later in the same quarter.

Program manager for Spacelab 1
(Continued on page 3)



MARS BOUND — Viking 1's view of Mars as the spacecraft nears the red planet next June will look something like the above artist's concept. Data from a recent systems checkout indicate that one of Viking 2's soil sample ovens on the Lander has apparently cratered.

Viking 2 Lander Oven Fails Checkout Tests

One of three small ovens on an experiment aboard the Mars-bound Viking 2 Lander apparently did not operate during recent checkout tests.

A study of the data from the tests showed that Oven 1 either failed to heat or that data from a monitoring device is faulty.

The ovens are designed to heat Martian soil samples to 500 degrees Celsius (932 degrees Fahrenheit) to identify chemical processes in the soil and determine if organic materials exist that would indicate the possibility of life forms on the planet, either in the past or at present.

The possible loss of one oven means that only two soil samples will be tested instead of three and will not affect the operation of the experiment.

NASA Considers Shuttle Orbiter Overland Move

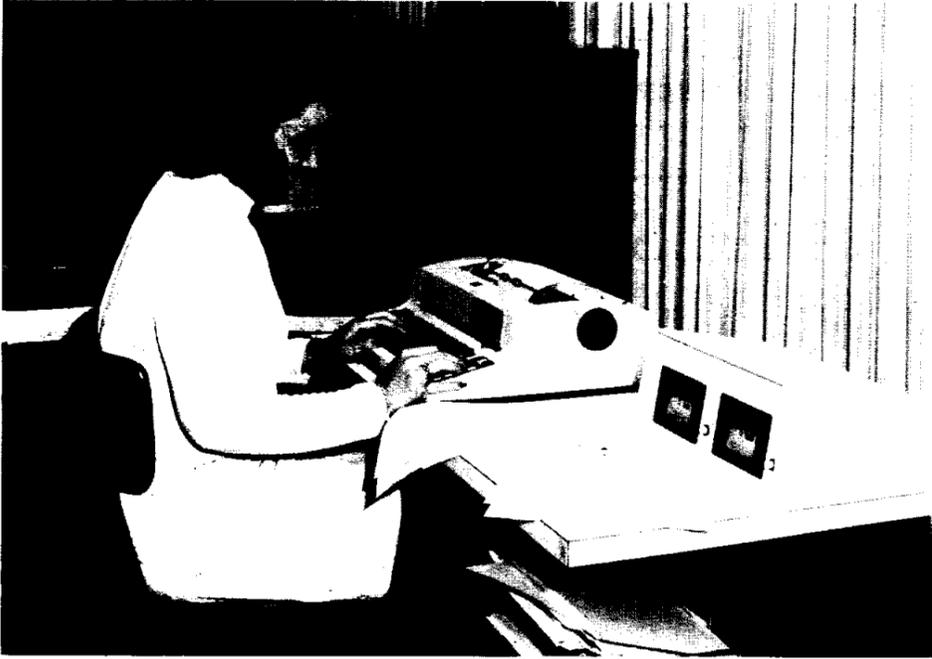
NASA has released a draft environmental impact statement for proposed overland transport of the first Space Shuttle Orbiter from Palmdale to the NASA Dryden Flight Research Center (DFRC), Calif. The Orbiter is currently being assembled at Palmdale and will be transferred to DFRC for conduct of the Approach and Landing Test Program. The alternative to overland transport is via air transport atop the NASA 747.

While the cost of either method is essentially the same, there are substantial advantages and lessened risks associated with the first mated flight from DFRC. The lessened risk is due to the longer, wider runway and the added overrun on the lake bed at DFRC. These characteristics permit considerable ex-

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SUMMING UP — University of Houston's Dr. Winford Holland speaks to JSC employees attending the first in the series of Management Development Films February 5 in the Auditorium — Motivation through Job Enrichment. Holland and UofH Dr. Walter Natemeyer will amplify the ideas in each film in the series. Upcoming films are The Self-Motivated Achiever, Feb. 18; Understanding Motivation, Feb. 19; Theory X and Theory Y, Feb. 25 — part 2 Feb. 26; Human Nature and Organizational Realities, Mar. 3; and Management of Human Assets, Mar. 4. Films start at noon each day.



WORDSMITHY — Chyrene Swan operates a cassette-driven automatic typewriter in the Institutional Procurement Division's word-processing center. Typing assignments range from short memos to bulky RFPs and contracts. Specialists in the center operating the equipment each average about 25 typed pages daily.



CENTRALIZED ADMIN — Carol Turner handles a typing chore between phone calls in the Institutional Procurement Division's administrative unit. The admin unit's duties range from keeping all division T&A records, internal mail and message handling and travel orders, to telephone answering for division employees, using king-size calldirectors.

Institutional Procurement Streamlines Operations

The JSC Institutional Procurement Division recently set up a pilot project using word-processing equipment and techniques. The new method of operation has significantly reduced costs and improved productivity as well as more equitably distributing clerical workloads.

Secretarial and clerical functions have been consolidated into a single Division Administrative Support Office. Headed by a supervisory administrative specialist, the new office has a word-processing center, an administrative unit and a pro-

urement support unit. A lead clerk heads each unit.

The systems approach is reported to allow the Division wider use of automated typing equipment while providing new career-growth opportunities, and clerical and professional employees have voiced satisfaction with the new system.

One employee in the new office summed it up with, "I wholeheartedly think the Administrative Support Group concept should be used in other JSC organizations ... It makes for a more cooperative, efficient, and overall a more knowledgeable organization."

Apollo 14 ALSEP

(Continued from page 1)

established on a planet's surface, besides the Earth, for the foreseeable future. The seismic instruments at the ALSEP stations are the most sensitive of any in existence.

The data returned by the ALSEPs has laid much of the groundwork for the orbital studies of planets.

The Apollo 12, 15, 16 and 17 ALSEPs have an estimated life of three years remaining.

The ALSEP stations, which are powered by small nuclear reactors, were designed and built by the Bendix Corporation, Aerospace Systems Division, Ann Arbor, Michigan.

Pioneer 10 Crosses Saturn Orbit Enroute to Solar System Exit

Pioneer 10, on its way out of the solar system, Tuesday crossed the orbit of Saturn.

Pioneer 10 is making history's first trip out of the solar system and will leave man's home planetary system altogether when it crosses the orbit of Pluto in 1987.

Pioneer 10's sister spacecraft, Pioneer 11, is now making the first trip to Saturn itself (the planet, not its orbit), and will reach there in September 1979.

Pioneer 10, during the first part of its mission, completed the first trip to Jupiter in December 1973. Pioneer 10 carries a message to any intelligent beings which might retrieve it in millions of years. Scientists calculate that as it wanders through the galaxy, Pioneer will encounter a star system (solar system) about once every million years. The vacuum of space should preserve the spacecraft in good condition, though its nuclear power source will die completely in a few decades.

The Pioneers are managed by NASA's Ames Research Center, Mountain View, Ca.

The sensitive "big dish" antennas of NASA's Deep Space Network will be able to hear Pioneer 10 as far out as the orbit of Uranus, 3.2 billion km (two billion miles)

from Earth. It will reach Uranus' orbit in 1979.

Project officials say communication may be possible well beyond Uranus.

All systems aboard the 570 pound spacecraft continue to work well, and Pioneer is returning valuable data about the character of the interplanetary medium (the Sun's atmosphere) from the unexplored

space out beyond the orbit of Jupiter.

It also is studying the interstellar medium, gradients of cosmic rays from the galaxy, and ratios of elements in interstellar space. Scientists use this data to try to determine the origin of the universe.

On the February 10 orbit-crossing date, Saturn was about 100 degrees around its orbit from Pioneer 10.



AWARD-WINNING ILLUSTRATORS — Honors for excellence in space illustration went to these three JSC/industry employees at the January 24 Society for Technical Communication Houston Chapter annual awards dinner. Left to right are Raymond J. Bruneau of JSC Graphic Services who won a certificate of achievement for his Space Shuttle pictorial concept; Donna Hare of Aeronutronic-Ford, who won an award of merit for her projectural art of the JSC Mission Control Center; and Jerry Lee Elmore of Kentron Hawaii, Inc. who received the "best-of-show" award for a space station concept. The three illustrators are now eligible to compete in the international STC competition in May.

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ROUNDUP



NASA LYNDON B. JOHNSON SPACE CENTER

HOUSTON, TEXAS

The **Roundup** is an official publication of the National Aeronautics and Space Administration Lyndon B. Johnson Space Center, Houston, Texas, and is published every other Friday by the Public Affairs Office for JSC employees.

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Photographer: A. "Pat" Patnesky

Culbertson to Manage Hq Program Integration

NASA Administrator Dr. James C. Fletcher announced the establishment of the Office of Planning and Program Integration at NASA Headquarters, effective January 25, 1976.

Concurrently, Philip E. Culbertson was named Assistant Administrator for Planning and Program Integration.

The Office of Planning and Program Integration will develop and maintain the agency plan for long-term utilization of the Space Transportation System (STS) and will integrate and represent user requirements for the STS.

Culbertson has been with NASA since 1965. He has served in a variety of positions in manned

flight programs, including Director of Project Integration for Apollo Applications and Director of the Advanced Manned Mission Program. Before coming to NASA he was with the Convair Division of General Dynamics Corp. for 11 years.

Culbertson holds a B.S. degree in aeronautical engineering from Georgia Tech and an M.S. degree in aeronautical engineering from the University of Michigan. He served as a commissioned officer in the U.S. Navy, including duty in the Guidance Laboratory at Point Mugu, Calif.

Culbertson and his wife, Shirley, reside in McLean, Va. They have a son, Philip, Jr. and a daughter, Conden.

Credit Union Election Nears

The new voting procedure adopted by the Board of Directors for the election of Board and Credit Committee members allows for voting five days prior to the annual meeting. The polls will close when the annual meeting is called to order. The voting time and places are as follows:

Saturday, February 28 – Credit Union, 9 – 12
 Monday, March 1 – Credit Union, 10:30 – 5
 Tuesday, March 2 – Credit Union, 10:30 – 5
 Wednesday, March 3 – Credit Union, 10:30 – 5
 Thursday, March 4 – Credit Union, 10:30 – 1 and the JSC Auditorium – 4 until the start of the annual meeting

The results will be announced at the annual meeting.

The Nominating Committee has met and selected five candidates for the four Board of Directors posi-

tions and three candidates for the two Credit Committee positions. Candidates will be posted in the Credit Union office by February 13.

Nominations for vacancies may also be made by petition signed by 100 members of the Credit Union. Petitions must be filed with Tom Krenek, Board Secretary, no later than February 18, 1976. Anyone seeking to be nominated by petition should contact Jim Ragan for the petition format. Petitions must be accompanied with a certificate from the nominee stating that he or she is agreeable to nomination and will serve if elected to the office.

Spacelab

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and 2 payloads is Robert Kennedy of the Spacelab Payloads Office, Solar Terrestrial Programs Division, NASA Office of Space Science.

The project assignment gives MSFC the following specific responsibilities:

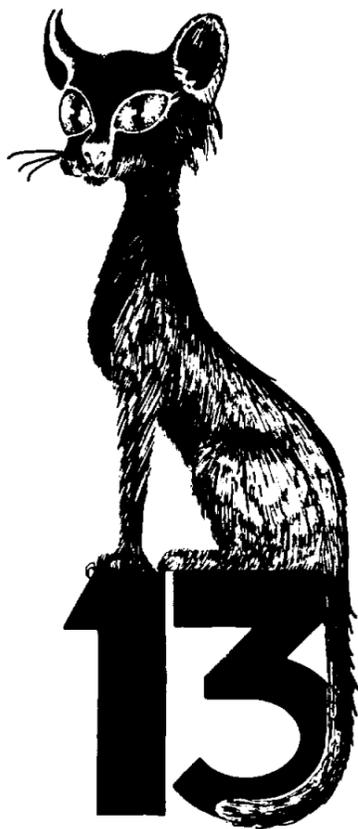
- * Define and implement Spacelab 1 and 2 payloads through the Announcement of Opportunity process.

- * Define, document and control the integration and checkout of the rack-mounted or pallet-mounted instruments in Spacelab.

- * Assure that all experiment equipment is mounted and checked out properly on Spacelab racks or pallets before being assembled as a group for integration into Spacelab.

- * Define the payload mission operations and data handling requirements.

- * Produce an integrated data analysis composed from the individual reports on all experiments.



Friday the 13th Falls on Friday Almost Always

Friday the 13th falls on Friday this month – not on Tuesday as it often did for the late Pogo and his compatriots at Fort Mudge in Okefenokee Swamp.

Perhaps if it were a moveable feast like Columbus Day and Washington's birthday, the 13th falling on Friday could be avoided altogether. But no such luck; it happens again in August. Next year will be less hazardous, since May has the only 1977 Friday 13th.

One solution for eliminating Fridays the 13th would be to skip it the same way that the 13th floor is skipped in many commercial office buildings and hotels.

The obvious way to quit worrying about Friday the 13th impacting one's luck is for each person to realize that he, and not the calendar, shapes his own destiny and "luck."



FOODMAKERS – JSC Director Christopher C. Kraft, Jr., right foreground, chats with members of Research and Development Associates for Military Food and Packaging Systems, Inc. during the group's February 5-6 meeting in JSC's Gilruth Recreation Center. R&DA coordinates research and development in food, food service and packaging systems between government agencies, academic institutions and private industry.

EAA ATTRACTIONS

On sale in Bldg. 11 Exchange Store 10 am to 2 pm, no refunds: Windmill Dinner Theater, Shelly Berman in *Don't Drink the Water*, \$14/couple--only 24 tickets, valid only Wed, Thurs and Sun; unsold tickets go back March 1. Dean Goss Dinner Theater, *Norman, Is that You?* \$16/couple. Sea Arama \$3.25 adults, \$2.25 children. Houston Livestock Show and Rodeo: Charlie Pride Mar 2 and Mack Davis Mar 7,

\$5.50 each for evening performances, unsolds go back Feb 20. Free Disney Magic Kingdom cards and Lion Country Safari cards. Today is final day to buy EAA Western Dance tickets at \$7.50/person. EAA's phone number is 4592.

DEFENSIVE DRIVING – ONE MORE TIME!

EAA is sponsoring the Defensive Driving course one more time for

procrastinators who missed out when it was offered in January and November. Registration will be in the Gilruth Center lobby March 1 and 2 from 7:30 to 9 am, 10:30 am to 1 pm, and 4 to 6 pm. Classes will be the following week, either Mon and Wed, or Tues and Thurs 6 to 10 pm. Costs \$8 payable at registration.

EMPLOYEE SURVEY

A survey for employee opinions and suggestions should reach each JSC employee today. The EAA Executive Board has put a lot of time and thought into its preparation, so please take the time to complete it, make constructive comments, and buck it back to your EAA rep by Friday, Feb 20.

CITRUS SALE

The second EAA citrus sale of 1976 is now in progress. Orders must be in by Feb 19. Prices have been reduced to \$6.95 for the large box and \$3.95 for the small box.

JSC DANCE CLUB

Beginners dance classes start February 18 at 7 pm in the Gilruth Recreation Center, room 204. Call Edi Quinn at 3431 for more info or for partner match-up.

JSC TENNIS CLUB

JSC Tennis Club membership is open to all JSC and on-site industry employees with a fee of \$1 per member. The final date for renewal of 1975 membership is March 1, and all unpaid members on the 1975 roster will be dropped after this date. Dues for 1976 must be paid before entering any Club-sponsored tournament. Membership chairperson Carolyn Thompson/BW4, Bldg 1 Rm 632, ext 4551, is collecting membership fees. Include names of all members, new or renewal, home/office phones and mail codes.

Roundup Swap-Shop

Swap Shop advertising is available to JSC and on-site contractor personnel. Articles or services must be offered as advertised, without regard to race, religion, sex or national origin. Ads should be 20 words or less, including home telephone number. Name and office code must accompany, but need not be included in ad copy. Typed or printed copy must be received (AP3 Attn: Roundup) by Thursday of the week before publication.

BOATS

Roomy 15-ft molded plywood boat w/trlr, 35-hp OB, needs work, \$150. 534-4946.

14-ft Falcon fiberglass w/18-hp Evinrude, stick steer, 2 swiv seats, trolling motor, Little Dude trlr, \$750. Lowe, 482-3861.

25-ft Bertram fiberglass hrtdp, twin 120-hp Mercruiser engs w/outdrvs, marine radio, cooler, dive ladder, etc. \$5800. 488-0434.

Info on prices, market value, condition of eight used Lido 14 sailboats for sale by owners. Hoover, 334-2392.

15-ft Glastron, 40-hp Johnson OB, Yarbrough tilt trailer, incl skis, \$750. Siggins, 559-2365.

Finn No. 297, Newport builder, from valuable mold, two masts, boom, sails, winner numerous local and district races, galv Fin trlr. Goodman, 333-2778.

VEHICLES

71 Caddy Coupe DeVille, solid white w/white seats, red trim, near perf cond, good mileage. Russell, 477-6393 after 5:30.

71 Honda CL-70 street bike, \$175. White, 554-2916 LgCty.

70 Opel GT, garaged, like new cond in & out, only 26,400 miles, new Pirelli radials, AM/FM/8-trk, other xtras, asking \$2595. 488-2735.

Set of five shop manuals for all 72 Ford autos, \$5. Parker, 440-6147.

74 Triumph 750 3-cyl rebored .040, perf cond, adult, must sell, \$1650. Annexstad, 534-4338.

70 Pontiac 4-dr, air, pwr steer/brakes, perf cond, \$1250. 482-7546.

Ford 8-N tractor w/new grader blade, everything works, \$1350. Zill, 483-2457.

67 Chevy Impala custom 2-dr HT, 238 V8, pwr steer, auto, air, good cond, \$700. 488-2797 after 5.

72 Pontiac Lemans 2-dr HT Sport, loaded w/xtras, dk brown w/beige vinyl top, xint cond, \$2295. Sam, 483-3647.

Boy's 20-in 3-spnd Schwinn, \$20. Larry, 946-4311.

Universal swng mch, zig-zag, other fancy stitches, in desk cab, xint cond, ask \$75. Newlander, 482-2119.

74 Yamaha 100MX dirt bike, xint cond, never raced, \$395. 554-3600.

73 Volvo 164, auto, pwr, air, AM/FM stereo, low miles, \$4250. Sampsel, 471-0172.

Lady's coaster-brake bike w/Sear infant seat, xint cond, \$40. Barbee, 721-1528.

PETS

11-wk old red male Dachshund, \$30. 481-3968.

Fawn Boxer pups from champ stock avail March. Bailey, 337-2855.

Champ fawn Boxer at stud, Ch. Moreleen's Apache Ambush. Bailey, 337-2855.

WANTED

Will pay up to \$5 for 66 Olds chassis manual. Brooks, 332-2837.

Double bed w/frame. Doherty, 488-0182.

Horizon backpack combo or similar qual. Dickinson 534-3385.

12-lb bowling ball. 483-4851.

PROPERTY & RENTALS

2-acre lot in Eldorado subdiv Friendswood, \$8000. Zupp, 482-7156.

Several Crystal Beach lots, ideal for beach house. Schneider, 426-4749.

By-the-sea condominium apartment, Galveston West Beach, 2-bdr, air cond, full kitch, swimpool, tennis court, near golf, weekly rental. Clements, 474-2622.

HOUSEHOLD ARTICLES

Blue/olive green 108-in sofa, coffee table, occ chair, misc drapes, oil paintings & frames, bsktbl goal, must sell. Thompson, 332-2229.

Heathkit 25-in solid-state color TV, unassembled, \$550. 488-8678.

Large modern blue-green sofa w/2 mtchnng chairs, \$225; two modern endtables & mtchnng coffee table, solid wood, \$100. 482-7233 anytime.

Two twin-size beds w/frames, firm Sealy Posturpedic matt. Goodman, 333-2778.

Mahogany early American highboy, good cond. Goodman, 333-2778.

Sears Coldspot 2-dr 12.3 cu ft white refrigerator, xint cond, \$75. Handley, 482-7041.

Portacrib, needs mattress, some sheets, pads & blinkts incl. \$10. Barbee, 721-1528.

Hobby horse, \$10; riding worm, \$5; misch infant needs (crib pads, blinkts, clothes) \$5 for all. Barbee, 721-1528.

MISCELLANEOUS

6-day Windjammer cruise ticket for two, choice of Bahamas, British Virgin Islands or West Indies, \$590 value for \$500, free literature on areas/trip. Goodman, 333-2778.

Falcon gas grill, needs support post. Judie Boin, 488-1244.

Peterson twin baby stroller, \$10; set orig Corvair hubcaps, \$10. 482-7233 anytime.

Two gas lawn edgers, good cond, \$50 each. TexCty 945-7584 after 6.

Sears Exercycle, good cond, \$35. Kosel, 534-6098 Dksn.

Ruger .44 mag, cust grips, carrycase, ammo, perf, \$190. 488-3966.

Rieker child-size ski boots (4-5 year-olds), like new, \$15. Pitts, 991-3138.

Ceramic greenware and bisk, planters, Easter items. 433-4018 after 6:30.

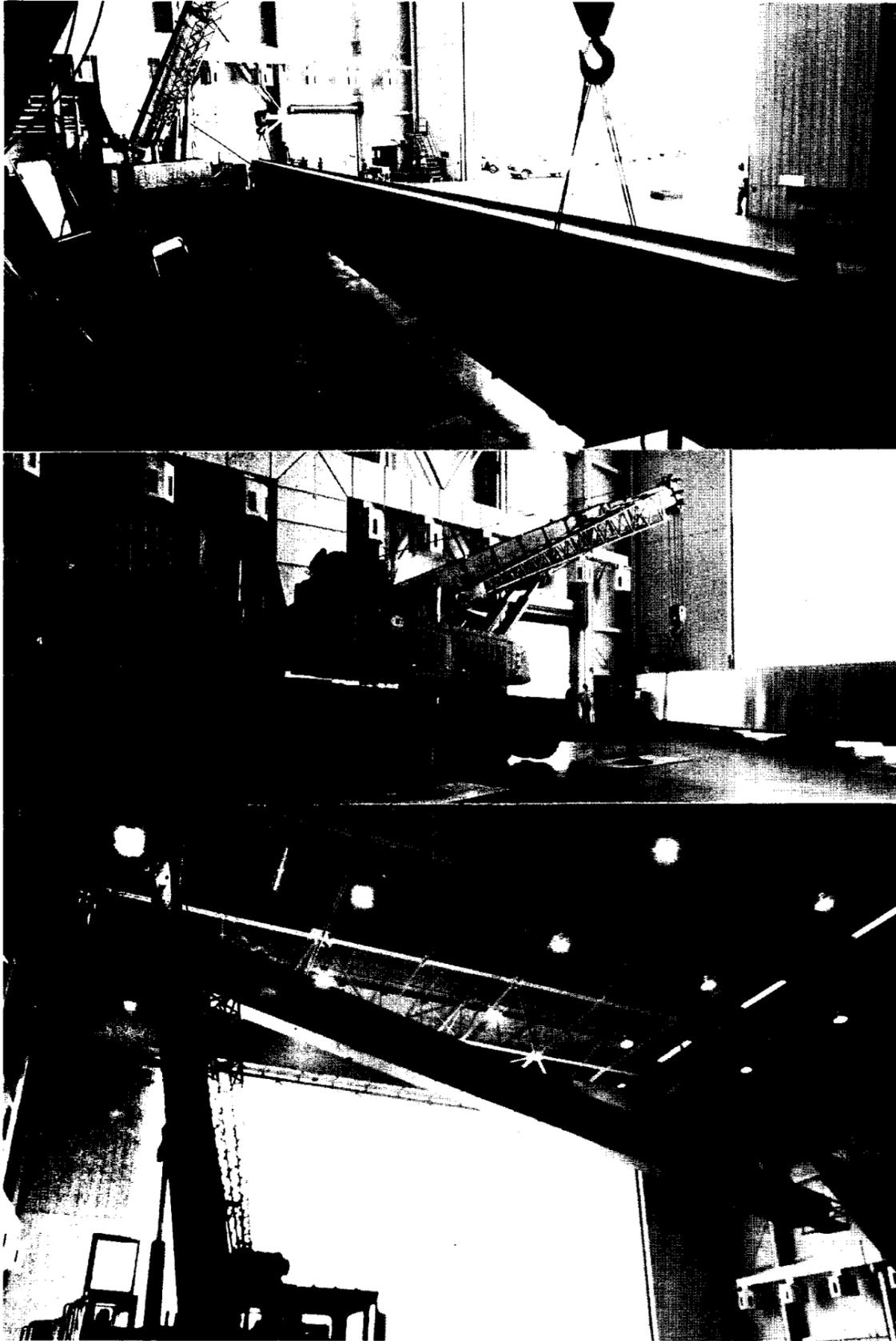
Bike child carrier, xint cond, cost \$9, sell \$4. Handley, 482-7041.

B&H cube-type slide projector, barely used, perf (have one too many), xtra cubes, \$70 or best offer. Allgeier, 474-3961.

Firewood: \$85/cord, \$45/half cord. Katje, 944-3765.

Fireplace logs cut and delivered, \$40/half-cord, \$75 full cord. Gerke, 333-2269.

Pvt, comml and inst flight and ground instruction, biennial checks. Black, 482-1635.



BIG LIFTER — The first of two 118-ft span bridge cranes last week was hoisted into place on its rails in Bldg 9A Spacecraft Design Division Mockup and Trainer Lab. Built by Aztec Cranes in their Monterrey, Mexico plant, the crane is the longest-span bridge crane at JSC, but the 50-ton bridge crane in Bldg 32 Space Environment Simulation Laboratory retains the title of heaviest lifting capacity. The new cranes each have a 20-ton lifting capacity with a 50-foot hook height, and are controlled by the operator on the floor with a pendant control box. The second of the matched pair is expected to arrive within a month on rail flatcars to Webster, from where the two 65,000-pound beams will be trucked to JSC on lowboy trailers. In the middle photo above, one of two motorcranes used by the erecting contractor grunts and raises its front wheels off the floor under the load. The pair of bridge cranes will be used for moving Space Shuttle simulated payloads and mockups in and around the Orbiter full-scale mockup and on the large air-bearing table.

Lewis Ion Engine Sets Endurance Mark

Electric propulsion research took a giant step forward as engineers at NASA's Lewis Research Center surpassed the old world mark with the completion of 15,000 hours of successful operation of an eight-centimeter mercury ion thruster.

Initiated in the summer of 1973, the tests sought to evaluate ion chamber erosion and peeling of sputtered metal observed in previous life tests; to determine the reliability of thrusters under cyclic operation; and to identify longer term failure modes not apparent in

shorter tests.

During the 15,000 hours of operation, Lewis engineers performed 460 re-starts over the 26-month period.

Northrop Renewed

NASA has signed a \$8.8 million, one-year, contract extension with Northrop Services, Inc., Houston, Texas, for operations and maintenance of laboratory and test facilities at JSC.

This extension brings the estimated value of the contract to \$37,146,742. Northrop has been providing operation and maintenance services to JSC for the past three years.

The work to be performed will consist of maintenance and operation of life sciences and engineering laboratories and the lunar curatorial laboratory. A total of 425 people are employed under this contract.

MSFC Fires Main Engine

Rocket engineers have succeeded in achieving the first "mainstage" test of the Space Shuttle Main Engine (SSME), according to the NASA-Marshall Space Flight Center.

The engine, known as the Integrated Subsystem Test Bed (ISTB), was fired for 3.38 seconds on Stand A-1 at the National Space Technology Laboratories in Hancock County, Miss.

Tests there are being conducted by personnel of the Rocketdyne

Division of Rockwell International Corp. under direction of the Marshall Center. Rocketdyne is prime contractor for the engine and the Marshall Center is responsible for its development.

In the test, a major milestone in the program, the engine reached and stabilized at its minimum power level, which is 50 per cent of its rated power level of 1,668,075 Newtons (375,000 pounds thrust) at sea level and 2,090,654 Newtons (470,000 pounds) at altitude.

SPSE Presents Lecture On Photographic Heritage

Dr. Walter Clark will present a lecture "Conservation of our Photographic Heritage" on Thursday, March 11, 7:30 pm at the Lunar Science Institute. With no charge or obligation the public is invited to attend for this opportunity to hear Dr. Clark's lecture presented by the Houston Chapter of the Society of Photographic Scientists and Engineers.

Dr. Clark was instrumental in the establishment of the International Museum of Photography at the George Eastman House; he is now Consultant on Conservation for the House, and has just designed and installed a conservation laboratory there.

At the invitation of Dr. C. E. K. Mees, Director of Research for the Eastman Kodak Company, he founded and directed the Kodak Research Laboratories at Harrow, England, and after three years transferred to Rochester, N. Y. to be Technical Assistant to Dr. Mees. He was later appointed Head of the newly-formed Applied Photography Research Division of the Kodak Research Laboratories.

Dr. Clark has worked in and been responsible for research in a wide range of fields, including photographic processing chemistry and systems, graphic arts, aerial photography, document reproduction and microforms, a tropical research laboratory in Panama and research library and information services. A special interest has been the preservation and restoration of photographs and photographic equipment.

The subject of his lecture will be "Conservation of Our Photographic Heritage."

The need for effective preservation of photographic resources has never been more apparent or important, whatever their purpose — historical, documentary, scientific or technical, legal or business, professional or personal. Yet, photographs are extremely sensitive to their environment, because they are made of potentially unstable materials.

Dr. Clark, now Consultant on Conservation for the International Museum of Photography at The George Eastman House, in Rochester, N. Y., will review the problems, describe the structure of photographic materials and the identification of the processes by which earlier photographs were made, discuss the chances for relative performance, the restoration of degrading photographs, the rules for ensuring longevity when making new photographs, the forms of

deterioration, factors leading to poor keeping and means for preventing further deterioration, proper enclosures and storage conditions and the special storage of historically-significant photographs.



Emphasis will be given to the proper preparation of today's photographs which will provide the heritage for tomorrow. The lecture will be fully illustrated by a unique collection of slides. The program and facilities of the new conservation laboratory at The George Eastman House — unique in its field — will be included in relation to the subject of the lecture.

AIAA Section Holds Technical Mini Symposium

The AIAA Houston Section will conduct its first annual Technical Mini-Symposium at the Gilruth Recreation Center on Tuesday, March 2, 1976, from 4-7 p.m. Loren Wood of TRW, Chairman of the Houston Section, AIAA, has appointed Hubert P. Davis of JSC as General Chairman of the Symposium. Richard F. Hergert, James C. McLane, Chester A. Vaughan, Claiborne R. Hicks, and Dr. Wayland E. Hull of JSC are also key members of the organizing committee.

The theme of the Symposium will be "Technical Frontiers in Physical Sciences, Life Sciences, and Engineering and Technology," and three concurrent sessions based on these main topics will be held. Each of these main sessions will be divided into sub-sessions, each with a particular focus, from 4-5 p.m., 5-6 p.m., and 6-7 p.m. A total of 34 papers will be presented from JSC and contractor employees.

Following the Symposium, a cocktail party and banquet will be held at the Gilruth Center. The banquet speaker will be Dr. Simon Ramo, vice chairman of the board and chairman of the executive committee of TRW, whose topic will be "New Technology Frontiers for the Next Decade."

The AIAA cordially invites all JSC and contractor employees and their friends to attend the Symposium and banquet. It is not limited to AIAA members and you can attend the Symposium without attending the banquet. For those wishing to attend the cocktail party and banquet the cost will be \$7 per person and reservations may be made by calling Lillian Hudson at 483-4991 by February 27.

Overland Orbiter

(Continued from page 1)

pansion of the ground taxi test to include short-duration, straight-ahead takeoff and some later lateral maneuvering. Extensive experience has been acquired over many years of aircraft testing at DFRC.

A final decision on the method of transporting the orbiter from Palmdale to DFRC will be contingent on evaluation of environmental considerations and congressional approval.